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# 2012 Daily Log

Another damn year...

## November 7

• os\_mumu

|                | top                   | VV->2l2x           | WZ->3l#nu        | Z+jets                  | BG                      | Observed | Signal (x10)              |
|----------------|-----------------------|--------------------|------------------|-------------------------|-------------------------|----------|---------------------------|
| Initial        | 1148537.00 ± 58108.48 | 26029.00 ± 1662.41 | 3824.03 ± 191.82 | 18013346.00 ± 682591.02 | 19191736.03 ± 685061.97 | 67845120 | 187.68 ± 18.77 (100.00 %) |
| post-ntuples   | 908240.75 ± 393.09    | 22444.21 ± 19.21   | 3404.52 ± 2.55   | 13029928.00 ± 2785.86   | 13964017.48 ± 2813.53   | 57318820 | 175.74 ± 0.57 (93.64 %)   |
| Good PV        | 105353.91 ± 133.88    | 7828.02 ± 11.09    | 1774.37 ± 1.84   | 5277015.00 ± 1772.90    | 5391971.30 ± 1777.98    | 22460916 | 141.66 ± 0.52 (75.48 %)   |
| 2 os leptons   | 9947.93 ± 46.09       | 1792.49 ± 5.85     | 437.07 ± 1.02    | 2231681.00 ± 1292.79    | 2243858.49 ± 1293.63    | 2385681  | 14.62 ± 0.20 (7.79 %)     |
| 1 b-jet        | 9947.93 ± 46.09       | 1792.49 ± 5.85     | 437.07 ± 1.02    | 2231681.00 ± 1292.79    | 2243858.49 ± 1293.63    | 2385681  | 14.62 ± 0.20 (7.79 %)     |
| Soft muon veto | 5279.63 ± 33.60       | 50.10 ± 0.92       | 19.44 ± 0.22     | 20334.80 ± 123.11       | 25683.96 ± 127.62       | 31314    | 7.93 ± 0.15 (4.22 %)      |
| MET > 30       | 4656.67 ± 31.54       | 39.48 ± 0.86       | 15.62 ± 0.19     | 5224.69 ± 60.57         | 9936.45 ± 68.30         | 13435    | 6.91 ± 0.14 (3.68 %)      |

## October 18

Updated trigger selection in analyzer. Now triggers are selected by string names and overlap between different streams is prevented.

## October 17

Analysis to-do:

- Complete 2012 ntuplization
- Re-do 2011 ntuples with current class definitions
- Modify trigger selector to:
  - ◆ take strings as selection
  - ◆ avoid overlap between different streams if overlapping streams are used (doubleMu and MuEG, for example)
- Implement MVA
- Update weights and come up with scheme for trigger weighting

## October 8

Added a soft muon veto to reduce b-jets faking muons.

### • 3l\_inclusive

|                | ttbar              | VV->2l2x         | WZ->3l#nu       | Z+jets                | BG                    | Observed | Signal                     |
|----------------|--------------------|------------------|-----------------|-----------------------|-----------------------|----------|----------------------------|
| Initial        | 808129.25 ± 411.83 | 26260.11 ± 21.25 | 11347.45 ± 8.12 | 14630400.00 ± 2430.05 | 15476136.82 ± 2464.81 | 45055656 | 35.33 ± 0.11<br>(100.00 %) |
| post-ntuples   | 478787.56 ± 317.26 | 20988.72 ± 19.05 | 8261.25 ± 6.81  | 9584830.00 ± 1966.89  | 10092867.53 ± 1992.41 | 10235324 | 33.08 ± 0.11<br>(93.64 %)  |
| Good PV        | 158597.19 ± 182.90 | 10936.87 ± 13.54 | 5196.56 ± 5.34  | 4924754.00 ± 1409.87  | 5099484.62 ± 1421.76  | 3456765  | 33.08 ± 0.11<br>(93.64 %)  |
| 3 leptons      | 69.41 ± 3.83       | 1.92 ± 0.14      | 453.89 ± 1.24   | 492.82 ± 14.10        | 1018.04 ± 14.67       | 1068     | 3.07 ± 0.03<br>(8.69 %)    |
| 1 b-jet        | 25.64 ± 2.33       | 0.13 ± 0.03      | 14.69 ± 0.22    | 10.09 ± 2.02          | 50.56 ± 3.09          | 55       | 1.50 ± 0.02<br>(4.25 %)    |
| Soft muon veto | 24.13 ± 2.26       | 0.12 ± 0.03      | 14.05 ± 0.22    | 8.88 ± 1.89           | 47.19 ± 2.96          | 48       | 1.34 ± 0.02<br>(3.79 %)    |
| MET > 30       | 20.49 ± 2.09       | 0.07 ± 0.03      | 10.94 ± 0.19    | 1.21 ± 0.70           | 32.70 ± 2.21          | 33       | 1.16 ± 0.02<br>(3.28 %)    |
| Z veto         | 18.77 ± 2.00       | 0.04 ± 0.03      | 3.20 ± 0.10     | 0.40 ± 0.40           | 22.41 ± 2.04          | 21       | 1.12 ± 0.02<br>(3.17 %)    |

## October 1

### • 3l\_inclusive

|              | ttbar     | VV->2l2x | WZ->3l#nu | Z+jets      | BG          | Observed | Signal |
|--------------|-----------|----------|-----------|-------------|-------------|----------|--------|
| Initial      | 791764.62 | 22954.24 | 4114.68   | 14625676.00 | 15444509.54 | 3840034  | 35.32  |
| post-ntuples | 469913.94 | 18470.76 | 3416.05   | 9581735.00  | 10073535.75 | 3792805  | 33.07  |
| Good PV      | 469913.94 | 18469.27 | 3415.89   | 9580557.00  | 10072356.10 | 3792155  | 33.07  |
| 3 leptons    | 68.87     | 0.97     | 454.22    | 509.61      | 1033.67     | 1104     | 3.09   |
| 1 b-jet      | 25.45     | 0.04     | 14.71     | 10.89       | 51.09       | 55       | 1.51   |
| MET > 30     | 21.60     | 0.04     | 11.48     | 2.02        | 35.14       | 35       | 1.31   |
| Z veto       | 19.89     | 0.04     | 3.39      | 1.21        | 24.53       | 23       | 1.26   |

## September 20

### • ss\_inclusive

|              | ttbar                | VV->2l2x              | WZ->3l#nu           | Z+jets                    | BG                        | Signal           | S/B               | Significance |
|--------------|----------------------|-----------------------|---------------------|---------------------------|---------------------------|------------------|-------------------|--------------|
| Initial      | 179758.52<br>± 93.43 | 148849.86<br>± 131.22 | 25679.25 ±<br>23.24 | 91365630.15<br>± 15175.47 | 91714556.78<br>± 15176.34 | 153.60<br>± 0.49 | 0.00<br>±<br>0.00 | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ±<br>62.89  | 114532.48<br>± 115.26 | 20144.25 ±<br>20.58 | 55634808.44<br>± 11841.97 | 55847117.32<br>± 11842.71 | 138.54<br>± 0.46 | 0.00<br>±<br>0.00 | 1.85 ± 0.00  |
| Good PV      | 81064.92 ±<br>62.74  | 113749.78<br>± 114.88 | 19637.03 ±<br>20.32 | 54611209.04<br>± 11732.53 | 54821894.45<br>± 11733.27 | 138.54<br>± 0.46 | 0.00<br>±<br>0.00 | 1.87 ± 0.00  |
| 2 ss leptons | 51.08 ±<br>1.57      | 94.92 ±<br>3.30       | 1263.30 ±<br>5.15   | 35091.58 ±<br>297.41      | 36496.90 ±<br>297.47      | 15.65 ±<br>0.16  | 0.04<br>±<br>0.00 | 8.19 ± 0.00  |
| 1 b-jet      | 28.99 ±<br>1.19      | 3.19 ± 0.61           | 56.78 ± 1.09        | 509.16 ±<br>35.82         | 598.04 ±<br>35.87         | 8.16 ±<br>0.11   | 1.36<br>±<br>0.08 | 33.15 ± 0.08 |
| MET > 30     | 15.10 ±<br>0.86      | 1.97 ± 0.48           | 28.54 ± 0.77        | 12.60 ± 5.64              | 58.16 ± 5.77              | 5.12 ±<br>0.09   | 8.80<br>±<br>0.89 | 64.34 ± 0.75 |

## • ss\_endcap

|              | ttbar                | VV->2l2x              | WZ->3l#nu           | Z+jets                    | BG                        | Signal           | S/B               | Significance |
|--------------|----------------------|-----------------------|---------------------|---------------------------|---------------------------|------------------|-------------------|--------------|
| Initial      | 179758.52<br>± 93.43 | 148849.86<br>± 131.22 | 25679.25 ±<br>23.24 | 91365630.15<br>± 15175.47 | 91714556.78<br>± 15176.34 | 153.60<br>± 0.49 | 0.00<br>±<br>0.00 | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ±<br>62.89  | 114532.48<br>± 115.26 | 20144.25 ±<br>20.58 | 55634808.44<br>± 11841.97 | 55847117.32<br>± 11842.71 | 138.54<br>± 0.46 | 0.00<br>±<br>0.00 | 1.85 ± 0.00  |
| Good PV      | 81064.92 ±<br>62.74  | 113749.78<br>± 114.88 | 19637.03 ±<br>20.32 | 54611209.04<br>± 11732.53 | 54821894.45<br>± 11733.27 | 138.54<br>± 0.46 | 0.00<br>±<br>0.00 | 1.87 ± 0.00  |
| 2 ss leptons | 3.54 ± 0.41          | 21.44 ±<br>1.57       | 107.00 ±<br>1.50    | 9185.01 ±<br>152.16       | 9316.16 ±<br>152.17       | 0.60 ±<br>0.03   | 0.01<br>±<br>0.00 | 0.62 ± 0.00  |
| 1 b-jet      | 1.75 ± 0.29          | 0.74 ± 0.29           | 3.36 ± 0.27         | 108.39 ±<br>16.53         | 114.22 ±<br>16.54         | 0.30 ±<br>0.02   | 0.26<br>±<br>0.04 | 2.80 ± 0.04  |
| MET > 30     | 1.02 ± 0.22          | 0.61 ± 0.27           | 1.70 ± 0.19         | 2.52 ± 2.52               | 5.84 ± 2.55               | 0.18 ±<br>0.02   | 3.15<br>±<br>1.41 | 7.51 ± 1.32  |

## • ss\_mixed

|              | ttbar                | VV->2l2x              | WZ->3l#nu           | Z+jets                    | BG                        | Signal           | S/B               | Significance |
|--------------|----------------------|-----------------------|---------------------|---------------------------|---------------------------|------------------|-------------------|--------------|
| Initial      | 179758.52<br>± 93.43 | 148849.86<br>± 131.22 | 25679.25 ±<br>23.24 | 91365630.15<br>± 15175.47 | 91714556.78<br>± 15176.34 | 153.60<br>± 0.49 | 0.00<br>±<br>0.00 | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ±<br>62.89  | 114532.48<br>± 115.26 | 20144.25 ±<br>20.58 | 55634808.44<br>± 11841.97 | 55847117.32<br>± 11842.71 | 138.54<br>± 0.46 | 0.00<br>±<br>0.00 | 1.85 ± 0.00  |
| Good PV      | 81064.92 ±<br>62.74  | 113749.78<br>± 114.88 | 19637.03 ±<br>20.32 | 54611209.04<br>± 11732.53 | 54821894.45<br>± 11733.27 | 138.54<br>± 0.46 | 0.00<br>±         | 1.87 ± 0.00  |

|              | ttbar        | VV->2l2x     | WZ->3l#nu     | Z+jets            | BG                | Signal      | S/B         | Significance |
|--------------|--------------|--------------|---------------|-------------------|-------------------|-------------|-------------|--------------|
|              |              |              |               |                   |                   |             | 0.00        |              |
| 2 ss leptons | 21.80 ± 1.03 | 48.85 ± 2.38 | 528.69 ± 3.33 | 15594.86 ± 198.26 | 16192.44 ± 198.31 | 4.40 ± 0.08 | 0.03 ± 0.00 | 3.46 ± 0.00  |
| 1 b-jet      | 11.75 ± 0.76 | 0.98 ± 0.34  | 19.94 ± 0.65  | 247.02 ± 24.95    | 279.66 ± 24.97    | 2.24 ± 0.06 | 0.80 ± 0.07 | 13.35 ± 0.07 |
| MET > 30     | 6.41 ± 0.56  | 0.26 ± 0.17  | 9.57 ± 0.45   | 5.04 ± 3.56       | 21.26 ± 3.64      | 1.36 ± 0.05 | 6.41 ± 1.12 | 28.65 ± 0.99 |

## • ss\_barrel

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B          | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|--------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 25679.25 ± 23.24 | 91365630.15 ± 15175.47 | 91714556.78 ± 15176.34 | 153.60 ± 0.49 | 0.00 ± 0.00  | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 20144.25 ± 20.58 | 55634808.44 ± 11841.97 | 55847117.32 ± 11842.71 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 19637.03 ± 20.32 | 54611209.04 ± 11732.53 | 54821894.45 ± 11733.27 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.87 ± 0.00  |
| 2 ss leptons | 25.74 ± 1.12      | 24.63 ± 1.67       | 627.61 ± 3.63    | 10311.71 ± 161.22      | 10988.30 ± 161.27      | 10.64 ± 0.13  | 0.10 ± 0.00  | 10.15 ± 0.00 |
| 1 b-jet      | 15.49 ± 0.87      | 1.46 ± 0.42        | 33.48 ± 0.84     | 153.76 ± 19.69         | 204.16 ± 19.73         | 5.62 ± 0.09   | 2.75 ± 0.27  | 38.80 ± 0.26 |
| MET > 30     | 7.67 ± 0.61       | 1.09 ± 0.36        | 17.26 ± 0.60     | 5.04 ± 3.56            | 31.06 ± 3.68           | 3.57 ± 0.07   | 11.50 ± 1.38 | 60.69 ± 1.12 |

## • 3l\_inclusive

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B          | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|--------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 25679.25 ± 23.24 | 91365630.15 ± 15175.47 | 91714556.78 ± 15176.34 | 153.60 ± 0.49 | 0.00 ± 0.00  | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 20144.25 ± 20.58 | 55634808.44 ± 11841.97 | 55847117.32 ± 11842.71 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 19637.03 ± 20.32 | 54611209.04 ± 11732.53 | 54821894.45 ± 11733.27 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.87 ± 0.00  |
| 3 leptons    | 6.80 ± 0.57       | 3.32 ± 0.61        | 1972.86 ± 6.44   | 1867.75 ± 68.61        | 3850.53 ± 68.92        | 10.45 ± 0.13  | 0.27 ± 0.01  | 16.82 ± 0.01 |
| 1 b-jet      | 2.53 ± 0.35       | 0.12 ± 0.12        | 65.02 ± 1.17     | 50.41 ± 11.27          | 118.08 ± 11.34         | 5.02 ± 0.09   | 4.25 ± 0.41  | 45.22 ± 0.38 |
| MET > 30     | 2.09 ± 0.32       | 0.12 ± 0.12        | 46.35 ± 0.99     | 5.04 ± 3.56            | 53.60 ± 3.71           | 4.12 ± 0.08   | 7.69 ± 0.55  | 54.24 ± 0.48 |
| Z veto       | 1.89 ± 0.30       | 0.12 ± 0.12        | 13.69 ± 0.54     | 0.00 ± 0.00            | 15.70 ± 0.63           | 3.99 ± 0.08   | 25.39 ± 1.13 | 89.86 ± 0.76 |

## • 3l\_endcap

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B         | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|-------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 25679.25 ± 23.24 | 91365630.15 ± 15175.47 | 91714556.78 ± 15176.34 | 153.60 ± 0.49 | 0.00 ± 0.00 | 1.60 ± 0.00  |
| post-ntuples |                   |                    |                  |                        |                        |               |             | 1.85 ± 0.00  |

|           | ttbar            | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B         | Significance |
|-----------|------------------|--------------------|------------------|------------------------|------------------------|---------------|-------------|--------------|
|           | 81451.25 ± 62.89 | 114532.48 ± 115.26 | 20144.25 ± 20.58 | 55634808.44 ± 11841.97 | 55847117.32 ± 11842.71 | 138.54 ± 0.46 | 0.00 ± 0.00 |              |
| Good PV   | 81064.92 ± 62.74 | 113749.78 ± 114.88 | 19637.03 ± 20.32 | 54611209.04 ± 11732.53 | 54821894.45 ± 11733.27 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.87 ± 0.00  |
| 3 leptons | 0.10 ± 0.07      | 0.26 ± 0.17        | 42.10 ± 0.94     | 184.00 ± 21.54         | 226.44 ± 21.56         | 0.12 ± 0.01   | 0.05 ± 0.01 | 0.80 ± 0.01  |
| 1 b-jet   | 0.05 ± 0.05      | 0.00 ± 0.00        | 1.14 ± 0.15      | 5.04 ± 3.56            | 6.23 ± 3.57            | 0.05 ± 0.01   | 0.79 ± 0.47 | 1.96 ± 0.47  |
| MET > 30  | 0.05 ± 0.05      | 0.00 ± 0.00        | 0.80 ± 0.13      | 0.00 ± 0.00            | 0.85 ± 0.14            | 0.04 ± 0.01   | 4.35 ± 1.14 | 3.92 ± 1.07  |
| Z veto    | 0.05 ± 0.05      | 0.00 ± 0.00        | 0.36 ± 0.09      | 0.00 ± 0.00            | 0.41 ± 0.10            | 0.04 ± 0.01   | 9.08 ± 2.89 | 5.54 ± 2.52  |

## • 3l\_2end1bar

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B          | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|--------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 25679.25 ± 23.24 | 91365630.15 ± 15175.47 | 91714556.78 ± 15176.34 | 153.60 ± 0.49 | 0.00 ± 0.00  | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 20144.25 ± 20.58 | 55634808.44 ± 11841.97 | 55847117.32 ± 11842.71 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 19637.03 ± 20.32 | 54611209.04 ± 11732.53 | 54821894.45 ± 11733.27 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.87 ± 0.00  |
| 3 leptons    | 0.63 ± 0.18       | 0.99 ± 0.34        | 290.03 ± 2.47    | 289.87 ± 27.03         | 581.49 ± 27.15         | 0.90 ± 0.04   | 0.15 ± 0.01  | 3.73 ± 0.01  |
| 1 b-jet      | 0.10 ± 0.07       | 0.00 ± 0.00        | 7.80 ± 0.41      | 0.00 ± 0.00            | 7.90 ± 0.41            | 0.38 ± 0.02   | 4.78 ± 0.39  | 13.13 ± 0.37 |
| MET > 30     | 0.10 ± 0.07       | 0.00 ± 0.00        | 5.43 ± 0.34      | 0.00 ± 0.00            | 5.52 ± 0.34            | 0.32 ± 0.02   | 5.73 ± 0.54  | 13.09 ± 0.49 |
| Z veto       | 0.05 ± 0.05       | 0.00 ± 0.00        | 2.19 ± 0.21      | 0.00 ± 0.00            | 2.24 ± 0.22            | 0.31 ± 0.02   | 13.88 ± 1.68 | 19.45 ± 1.36 |

## • 3l\_1end2bar

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B         | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|-------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 25679.25 ± 23.24 | 91365630.15 ± 15175.47 | 91714556.78 ± 15176.34 | 153.60 ± 0.49 | 0.00 ± 0.00 | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 20144.25 ± 20.58 | 55634808.44 ± 11841.97 | 55847117.32 ± 11842.71 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 19637.03 ± 20.32 | 54611209.04 ± 11732.53 | 54821894.45 ± 11733.27 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.87 ± 0.00  |
| 3 leptons    | 2.62 ± 0.36       | 1.00 ± 0.34        | 775.84 ± 4.04    | 615.02 ± 39.37         | 1394.45 ± 39.58        | 2.94 ± 0.07   | 0.21 ± 0.01 | 7.87 ± 0.01  |
| 1 b-jet      | 0.73 ± 0.19       | 0.12 ± 0.12        | 22.46 ± 0.69     | 12.60 ± 5.64           | 35.91 ± 5.68           | 1.46 ± 0.05   | 4.06 ± 0.66 | 23.85 ± 0.61 |
| MET > 30     | 0.58 ± 0.17       | 0.12 ± 0.12        | 15.86 ± 0.58     | 0.00 ± 0.00            | 16.56 ± 0.61           | 1.18 ± 0.04   | 7.15 ± 0.37 | 28.11 ± 0.33 |

|        | ttbar           | VV->2l2x        | WZ->3l#nu       | Z+jets          | BG              | Signal          | S/B              | Significance     |
|--------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|
| Z veto | $0.53 \pm 0.16$ | $0.12 \pm 0.12$ | $4.63 \pm 0.31$ | $0.00 \pm 0.00$ | $5.28 \pm 0.37$ | $1.14 \pm 0.04$ | $21.55 \pm 1.71$ | $44.93 \pm 1.21$ |

• 3l\_barrel

|              | ttbar                 | VV->2l2x               | WZ->3l#nu            | Z+jets                     | BG                         | Signal            | S/B              | Significance     |
|--------------|-----------------------|------------------------|----------------------|----------------------------|----------------------------|-------------------|------------------|------------------|
| Initial      | $179758.52 \pm 93.43$ | $148849.86 \pm 131.22$ | $25679.25 \pm 23.24$ | $91365630.15 \pm 15175.47$ | $91714556.78 \pm 15176.34$ | $153.60 \pm 0.49$ | $0.00 \pm 0.00$  | $1.60 \pm 0.00$  |
| post-ntuples | $81451.25 \pm 62.89$  | $114532.48 \pm 115.26$ | $20144.25 \pm 20.58$ | $55634808.44 \pm 11841.97$ | $55847117.32 \pm 11842.71$ | $138.54 \pm 0.46$ | $0.00 \pm 0.00$  | $1.85 \pm 0.00$  |
| Good PV      | $81064.92 \pm 62.74$  | $113749.78 \pm 114.88$ | $19637.03 \pm 20.32$ | $54611209.04 \pm 11732.53$ | $54821894.45 \pm 11733.27$ | $138.54 \pm 0.46$ | $0.00 \pm 0.00$  | $1.87 \pm 0.00$  |
| 3 leptons    | $3.45 \pm 0.41$       | $1.06 \pm 0.34$        | $864.88 \pm 4.26$    | $778.86 \pm 44.31$         | $1648.15 \pm 44.52$        | $6.49 \pm 0.10$   | $0.39 \pm 0.01$  | $15.95 \pm 0.01$ |
| 1 b-jet      | $1.65 \pm 0.28$       | $0.00 \pm 0.00$        | $33.63 \pm 0.84$     | $32.77 \pm 9.09$           | $68.04 \pm 9.13$           | $3.13 \pm 0.07$   | $4.60 \pm 0.63$  | $37.12 \pm 0.57$ |
| MET > 30     | $1.36 \pm 0.26$       | $0.00 \pm 0.00$        | $24.27 \pm 0.71$     | $5.04 \pm 3.56$            | $30.67 \pm 3.64$           | $2.58 \pm 0.06$   | $8.42 \pm 1.02$  | $44.80 \pm 0.87$ |
| Z veto       | $1.26 \pm 0.25$       | $0.00 \pm 0.00$        | $6.52 \pm 0.37$      | $0.00 \pm 0.00$            | $7.78 \pm 0.45$            | $2.50 \pm 0.06$   | $32.16 \pm 2.01$ | $78.03 \pm 1.21$ |

## September 18

• ss\_inclusive

|              | ttbar                 | VV->2l2x               | WZ->3l#nu            | Z+jets                     | BG                         | Signal            | S/B             | Significance     |
|--------------|-----------------------|------------------------|----------------------|----------------------------|----------------------------|-------------------|-----------------|------------------|
| Initial      | $179758.52 \pm 93.43$ | $148849.86 \pm 131.22$ | $10013.81 \pm 14.51$ | $91365630.15 \pm 15175.47$ | $91698891.33 \pm 15176.33$ | $153.60 \pm 0.49$ | $0.00 \pm 0.00$ | $1.60 \pm 0.00$  |
| post-ntuples | $81451.25 \pm 62.89$  | $114532.48 \pm 115.26$ | $7853.29 \pm 12.85$  | $55634808.44 \pm 11841.97$ | $55834826.37 \pm 11842.70$ | $138.54 \pm 0.46$ | $0.00 \pm 0.00$ | $1.85 \pm 0.00$  |
| Good PV      | $81064.92 \pm 62.74$  | $113749.78 \pm 114.88$ | $7727.60 \pm 12.75$  | $54611209.04 \pm 11732.53$ | $54809985.02 \pm 11733.26$ | $138.54 \pm 0.46$ | $0.00 \pm 0.00$ | $1.87 \pm 0.00$  |
| 2 ss leptons | $51.08 \pm 1.57$      | $94.92 \pm 3.30$       | $510.73 \pm 3.28$    | $35091.58 \pm 297.41$      | $35744.34 \pm 297.45$      | $15.65 \pm 0.16$  | $0.04 \pm 0.00$ | $8.27 \pm 0.00$  |
| 1 b-jet      | $28.99 \pm 1.19$      | $3.19 \pm 0.61$        | $22.80 \pm 0.69$     | $509.16 \pm 35.82$         | $564.06 \pm 35.86$         | $8.16 \pm 0.11$   | $1.45 \pm 0.09$ | $34.12 \pm 0.09$ |
| MET > 30     | $23.79 \pm 1.07$      | $2.70 \pm 0.56$        | $17.96 \pm 0.61$     | $90.74 \pm 15.12$          | $135.13 \pm 15.18$         | $7.05 \pm 0.10$   | $5.22 \pm 0.59$ | $59.10 \pm 0.53$ |

• ss\_endcap

|         | ttbar                 | VV->2l2x               | WZ->3l#nu            | Z+jets                     | BG                         | Signal            | S/B             | Significance    |
|---------|-----------------------|------------------------|----------------------|----------------------------|----------------------------|-------------------|-----------------|-----------------|
| Initial | $179758.52 \pm 93.43$ | $148849.86 \pm 131.22$ | $10013.81 \pm 14.51$ | $91365630.15 \pm 15175.47$ | $91698891.33 \pm 15176.33$ | $153.60 \pm 0.49$ | $0.00 \pm 0.00$ | $1.60 \pm 0.00$ |

|              | ttbar            | VV->2l2x           | WZ->3l#nu       | Z+jets                 | BG                     | Signal        | S/B         | Significance |
|--------------|------------------|--------------------|-----------------|------------------------|------------------------|---------------|-------------|--------------|
| post-ntuples | 81451.25 ± 62.89 | 114532.48 ± 115.26 | 7853.29 ± 12.85 | 55634808.44 ± 11841.97 | 55834826.37 ± 11842.70 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74 | 113749.78 ± 114.88 | 7727.60 ± 12.75 | 54611209.04 ± 11732.53 | 54809985.02 ± 11733.26 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.87 ± 0.00  |
| 2 ss leptons | 3.54 ± 0.41      | 21.44 ± 1.57       | 42.35 ± 0.94    | 9185.01 ± 152.16       | 9251.52 ± 152.17       | 0.60 ± 0.03   | 0.01 ± 0.00 | 0.62 ± 0.00  |
| 1 b-jet      | 1.75 ± 0.29      | 0.74 ± 0.29        | 1.49 ± 0.18     | 108.39 ± 16.53         | 112.35 ± 16.53         | 0.30 ± 0.02   | 0.27 ± 0.04 | 2.82 ± 0.04  |
| MET > 30     | 1.60 ± 0.28      | 0.73 ± 0.29        | 1.24 ± 0.16     | 17.64 ± 6.67           | 21.21 ± 6.68           | 0.26 ± 0.02   | 1.23 ± 0.40 | 5.64 ± 0.39  |

## • ss\_mixed

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B         | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|-------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 10013.81 ± 14.51 | 91365630.15 ± 15175.47 | 91698891.33 ± 15176.33 | 153.60 ± 0.49 | 0.00 ± 0.00 | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 7853.29 ± 12.85  | 55634808.44 ± 11841.97 | 55834826.37 ± 11842.70 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 7727.60 ± 12.75  | 54611209.04 ± 11732.53 | 54809985.02 ± 11733.26 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.87 ± 0.00  |
| 2 ss leptons | 21.80 ± 1.03      | 48.85 ± 2.38       | 215.25 ± 2.13    | 15594.86 ± 198.26      | 15879.00 ± 198.29      | 4.40 ± 0.08   | 0.03 ± 0.00 | 3.49 ± 0.00  |
| 1 b-jet      | 11.75 ± 0.76      | 0.98 ± 0.34        | 8.01 ± 0.41      | 247.02 ± 24.95         | 267.74 ± 24.97         | 2.24 ± 0.06   | 0.84 ± 0.08 | 13.64 ± 0.08 |
| MET > 30     | 9.71 ± 0.69       | 0.62 ± 0.27        | 6.25 ± 0.36      | 45.37 ± 10.69          | 61.93 ± 10.73          | 1.91 ± 0.05   | 3.09 ± 0.54 | 23.92 ± 0.51 |

## • ss\_barrel

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B         | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|-------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 10013.81 ± 14.51 | 91365630.15 ± 15175.47 | 91698891.33 ± 15176.33 | 153.60 ± 0.49 | 0.00 ± 0.00 | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 7853.29 ± 12.85  | 55634808.44 ± 11841.97 | 55834826.37 ± 11842.70 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 7727.60 ± 12.75  | 54611209.04 ± 11732.53 | 54809985.02 ± 11733.26 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.87 ± 0.00  |
| 2 ss leptons | 25.74 ± 1.12      | 24.63 ± 1.67       | 253.13 ± 2.31    | 10311.71 ± 161.22      | 10613.82 ± 161.25      | 10.64 ± 0.13  | 0.10 ± 0.00 | 10.33 ± 0.00 |

|          | ttbar        | VV->2l2x    | WZ->3l#nu    | Z+jets         | BG             | Signal      | S/B         | Significance |
|----------|--------------|-------------|--------------|----------------|----------------|-------------|-------------|--------------|
|          |              |             |              |                |                |             | 0.00        |              |
| 1 b-jet  | 15.49 ± 0.87 | 1.46 ± 0.42 | 13.29 ± 0.53 | 153.76 ± 19.69 | 183.97 ± 19.72 | 5.62 ± 0.09 | 3.05 ± 0.33 | 40.82 ± 0.31 |
| MET > 30 | 12.48 ± 0.78 | 1.34 ± 0.40 | 10.47 ± 0.47 | 27.73 ± 8.36   | 52.00 ± 8.42   | 4.88 ± 0.09 | 9.38 ± 1.53 | 64.65 ± 1.28 |

## • 3l\_inclusive

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B          | Significance  |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|--------------|---------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 10013.81 ± 14.51 | 91365630.15 ± 15175.47 | 91698891.33 ± 15176.33 | 153.60 ± 0.49 | 0.00 ± 0.00  | 1.60 ± 0.00   |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 7853.29 ± 12.85  | 55634808.44 ± 11841.97 | 55834826.37 ± 11842.70 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.85 ± 0.00   |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 7727.60 ± 12.75  | 54611209.04 ± 11732.53 | 54809985.02 ± 11733.26 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.87 ± 0.00   |
| 3 leptons    | 6.80 ± 0.57       | 3.32 ± 0.61        | 795.04 ± 4.09    | 1867.75 ± 68.61        | 2672.71 ± 68.74        | 10.45 ± 0.13  | 0.39 ± 0.01  | 20.18 ± 0.01  |
| 1 b-jet      | 2.53 ± 0.35       | 0.12 ± 0.12        | 26.77 ± 0.75     | 50.41 ± 11.27          | 79.83 ± 11.30          | 5.02 ± 0.09   | 6.28 ± 0.90  | 54.46 ± 0.79  |
| MET > 30     | 2.33 ± 0.34       | 0.12 ± 0.12        | 20.31 ± 0.65     | 5.04 ± 3.56            | 27.81 ± 3.64           | 4.35 ± 0.08   | 15.63 ± 2.07 | 76.63 ± 1.55  |
| Z veto       | 2.14 ± 0.32       | 0.12 ± 0.12        | 5.89 ± 0.35      | 0.00 ± 0.00            | 8.14 ± 0.49            | 4.21 ± 0.08   | 51.66 ± 3.27 | 119.71 ± 1.50 |

## • 3l\_endcap

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B           | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|---------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 10013.81 ± 14.51 | 91365630.15 ± 15175.47 | 91698891.33 ± 15176.33 | 153.60 ± 0.49 | 0.00 ± 0.00   | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 7853.29 ± 12.85  | 55634808.44 ± 11841.97 | 55834826.37 ± 11842.70 | 138.54 ± 0.46 | 0.00 ± 0.00   | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 7727.60 ± 12.75  | 54611209.04 ± 11732.53 | 54809985.02 ± 11733.26 | 138.54 ± 0.46 | 0.00 ± 0.00   | 1.87 ± 0.00  |
| 3 leptons    | 0.10 ± 0.07       | 0.26 ± 0.17        | 16.93 ± 0.60     | 184.00 ± 21.54         | 201.27 ± 21.54         | 0.12 ± 0.01   | 0.06 ± 0.01   | 0.84 ± 0.01  |
| 1 b-jet      | 0.05 ± 0.05       | 0.00 ± 0.00        | 0.36 ± 0.09      | 5.04 ± 3.56            | 5.45 ± 3.57            | 0.05 ± 0.01   | 0.90 ± 0.61   | 2.10 ± 0.60  |
| MET > 30     | 0.05 ± 0.05       | 0.00 ± 0.00        | 0.25 ± 0.07      | 0.00 ± 0.00            | 0.30 ± 0.09            | 0.04 ± 0.01   | 13.27 ± 4.66  | 6.84 ± 3.79  |
| Z veto       | 0.05 ± 0.05       | 0.00 ± 0.00        | 0.08 ± 0.04      | 0.00 ± 0.00            | 0.13 ± 0.06            | 0.04 ± 0.01   | 30.10 ± 15.72 | 9.61 ± 9.73  |

## • 3l\_2end1bar

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B         | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|-------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 10013.81 ± 14.51 | 91365630.15 ± 15175.47 | 91698891.33 ± 15176.33 | 153.60 ± 0.49 | 0.00 ± 0.00 | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 7853.29 ± 12.85  | 55634808.44 ± 11841.97 | 55834826.37 ± 11842.70 | 138.54 ± 0.46 | 0.00 ± 0.00 | 1.85 ± 0.00  |

|           | ttbar            | VV->2l2x           | WZ->3l#nu       | Z+jets                 | BG                     | Signal        | S/B          | Significance |
|-----------|------------------|--------------------|-----------------|------------------------|------------------------|---------------|--------------|--------------|
| Good PV   | 81064.92 ± 62.74 | 113749.78 ± 114.88 | 7727.60 ± 12.75 | 54611209.04 ± 11732.53 | 54809985.02 ± 11733.26 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.87 ± 0.00  |
| 3 leptons | 0.63 ± 0.18      | 0.99 ± 0.34        | 114.94 ± 1.55   | 289.87 ± 27.03         | 406.40 ± 27.08         | 0.90 ± 0.04   | 0.22 ± 0.02  | 4.46 ± 0.02  |
| 1 b-jet   | 0.10 ± 0.07      | 0.00 ± 0.00        | 3.11 ± 0.26     | 0.00 ± 0.00            | 3.21 ± 0.26            | 0.38 ± 0.02   | 11.77 ± 1.23 | 19.95 ± 1.03 |
| MET > 30  | 0.10 ± 0.07      | 0.00 ± 0.00        | 2.33 ± 0.22     | 0.00 ± 0.00            | 2.43 ± 0.23            | 0.34 ± 0.02   | 13.84 ± 1.62 | 20.22 ± 1.31 |
| Z veto    | 0.05 ± 0.05      | 0.00 ± 0.00        | 0.80 ± 0.13     | 0.00 ± 0.00            | 0.85 ± 0.14            | 0.33 ± 0.02   | 38.96 ± 6.89 | 30.43 ± 3.81 |

## • 3l\_1end2bar

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B          | Significance |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|--------------|--------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 10013.81 ± 14.51 | 91365630.15 ± 15175.47 | 91698891.33 ± 15176.33 | 153.60 ± 0.49 | 0.00 ± 0.00  | 1.60 ± 0.00  |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 7853.29 ± 12.85  | 55634808.44 ± 11841.97 | 55834826.37 ± 11842.70 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.85 ± 0.00  |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 7727.60 ± 12.75  | 54611209.04 ± 11732.53 | 54809985.02 ± 11733.26 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.87 ± 0.00  |
| 3 leptons    | 2.62 ± 0.36       | 1.00 ± 0.34        | 313.88 ± 2.57    | 615.02 ± 39.37         | 932.48 ± 39.46         | 2.94 ± 0.07   | 0.32 ± 0.02  | 9.62 ± 0.02  |
| 1 b-jet      | 0.73 ± 0.19       | 0.12 ± 0.12        | 9.32 ± 0.44      | 12.60 ± 5.64           | 22.77 ± 5.66           | 1.46 ± 0.05   | 6.40 ± 1.60  | 29.62 ± 1.42 |
| MET > 30     | 0.68 ± 0.18       | 0.12 ± 0.12        | 6.96 ± 0.38      | 0.00 ± 0.00            | 7.76 ± 0.44            | 1.25 ± 0.04   | 16.11 ± 1.07 | 41.65 ± 0.83 |
| Z veto       | 0.63 ± 0.18       | 0.12 ± 0.12        | 2.27 ± 0.22      | 0.00 ± 0.00            | 3.02 ± 0.30            | 1.20 ± 0.04   | 39.85 ± 4.26 | 58.58 ± 2.29 |

## • 3l\_barrel

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B          | Significance  |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|--------------|---------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 10013.81 ± 14.51 | 91365630.15 ± 15175.47 | 91698891.33 ± 15176.33 | 153.60 ± 0.49 | 0.00 ± 0.00  | 1.60 ± 0.00   |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 7853.29 ± 12.85  | 55634808.44 ± 11841.97 | 55834826.37 ± 11842.70 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.85 ± 0.00   |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 7727.60 ± 12.75  | 54611209.04 ± 11732.53 | 54809985.02 ± 11733.26 | 138.54 ± 0.46 | 0.00 ± 0.00  | 1.87 ± 0.00   |
| 3 leptons    | 3.45 ± 0.41       | 1.06 ± 0.34        | 349.29 ± 2.71    | 778.86 ± 44.31         | 1132.56 ± 44.39        | 6.49 ± 0.10   | 0.57 ± 0.02  | 19.22 ± 0.02  |
| 1 b-jet      | 1.65 ± 0.28       | 0.00 ± 0.00        | 13.98 ± 0.54     | 32.77 ± 9.09           | 48.40 ± 9.11           | 3.13 ± 0.07   | 6.47 ± 1.23  | 43.63 ± 1.08  |
| MET > 30     | 1.51 ± 0.27       | 0.00 ± 0.00        | 10.77 ± 0.48     | 5.04 ± 3.56            | 17.31 ± 3.61           | 2.72 ± 0.06   | 15.70 ± 3.29 | 60.74 ± 2.46  |
| Z veto       | 1.41 ± 0.26       | 0.00 ± 0.00        | 2.73 ± 0.24      | 0.00 ± 0.00            | 4.14 ± 0.35            | 2.63 ± 0.06   | 63.56 ± 5.66 | 101.15 ± 2.24 |

## September 14

## • 3l\_inclusive

|              | ttbar             | VV->2l2x           | WZ->3l#nu        | Z+jets                 | BG                     | Signal        | S/B<br>(x100) |
|--------------|-------------------|--------------------|------------------|------------------------|------------------------|---------------|---------------|
| Initial      | 179758.52 ± 93.43 | 148849.86 ± 131.22 | 20415.58 ± 20.72 | 91365630.15 ± 15175.47 | 91709293.11 ± 15176.34 | 153.60 ± 0.49 | 0.00 ± 0.00   |
| post-ntuples | 81451.25 ± 62.89  | 114532.48 ± 115.26 | 16017.19 ± 18.35 | 55634808.44 ± 11841.97 | 55842990.27 ± 11842.71 | 138.54 ± 0.46 | 0.00 ± 0.00   |
| Good PV      | 81064.92 ± 62.74  | 113749.78 ± 114.88 | 15612.15 ± 18.12 | 54611209.04 ± 11732.53 | 54817869.58 ± 11733.27 | 138.54 ± 0.46 | 0.00 ± 0.00   |
| 3 leptons    | 6.80 ± 0.57       | 3.32 ± 0.61        | 1583.53 ± 5.77   | 1867.75 ± 68.61        | 3461.19 ± 68.86        | 10.45 ± 0.13  | 0.30 ± 0.01   |
| 1 b-jet      | 2.62 ± 0.36       | 0.12 ± 0.12        | 53.20 ± 1.06     | 52.93 ± 11.55          | 108.88 ± 11.61         | 5.12 ± 0.09   | 4.70 ± 0.51   |
| MET > 30     | 2.43 ± 0.34       | 0.12 ± 0.12        | 40.65 ± 0.92     | 5.04 ± 3.56            | 48.24 ± 3.70           | 4.43 ± 0.08   | 9.18 ± 0.72   |

## September 4

Some more numbers with a bug fix for the 3l/ss overlap bug and normalized to 30 /fb.

### preselection

|                   | ttbar            | WW->2l2#nu         | WZ->3l#nu        | ZZ->2l2#nu     | Z+jets                 | BG                     | Signal        |
|-------------------|------------------|--------------------|------------------|----------------|------------------------|------------------------|---------------|
| single lepton     | 81451.25 ± 62.89 | 110713.40 ± 115.18 | 20144.25 ± 20.58 | 3819.08 ± 4.31 | 55634808.44 ± 11841.97 | 55850936.41 ± 11842.72 | 138.54 ± 0.46 |
| Good PV           | 81064.92 ± 62.74 | 109983.47 ± 114.80 | 19637.03 ± 20.32 | 3766.32 ± 4.28 | 54611209.04 ± 11732.53 | 54825660.77 ± 11733.27 | 138.54 ± 0.46 |
| Cosmics rejection | 81063.42 ± 62.74 | 109974.96 ± 114.79 | 19634.23 ± 20.32 | 3765.68 ± 4.28 | 54570617.54 ± 11728.17 | 54785055.83 ± 11728.91 | 138.52 ± 0.46 |

### Same sign

- ss\_inclusive

|              | ttbar        | WW->2l2#nu   | WZ->3l#nu      | ZZ->2l2#nu  | Z+jets            | BG                | Signal       |
|--------------|--------------|--------------|----------------|-------------|-------------------|-------------------|--------------|
| 2 ss leptons | 51.86 ± 1.59 | 92.14 ± 3.32 | 1263.09 ± 5.15 | 4.02 ± 0.14 | 35194.93 ± 297.85 | 36606.03 ± 297.91 | 15.64 ± 0.16 |
| 1 b-jet      | 39.38 ± 1.38 | 4.67 ± 0.75  | 97.51 ± 1.43   | 0.17 ± 0.03 | 1124.18 ± 53.23   | 1265.92 ± 53.27   | 11.27 ± 0.13 |
| MET > 30     | 32.87 ± 1.26 | 3.95 ± 0.69  | 74.70 ± 1.25   | 0.14 ± 0.03 | 153.76 ± 19.69    | 265.41 ± 19.78    | 9.75 ± 0.12  |

- ss\_endcap

|              | ttbar       | WW->2l2#nu   | WZ->3l#nu     | ZZ->2l2#nu  | Z+jets           | BG               | Signal      |
|--------------|-------------|--------------|---------------|-------------|------------------|------------------|-------------|
| 2 ss leptons | 3.84 ± 0.43 | 21.69 ± 1.61 | 106.89 ± 1.50 | 0.86 ± 0.06 | 9265.67 ± 152.82 | 9398.95 ± 152.84 | 0.60 ± 0.03 |
| 1 b-jet      | 2.86 ± 0.37 | 0.84 ± 0.32  | 5.97 ± 0.35   | 0.06 ± 0.02 | 234.41 ± 24.31   | 244.15 ± 24.32   | 0.41 ± 0.03 |
| MET > 30     | 2.57 ± 0.35 | 0.84 ± 0.32  | 4.58 ± 0.31   | 0.04 ± 0.01 | 25.21 ± 7.97     | 33.25 ± 7.99     | 0.36 ± 0.02 |

- ss\_mixed

|              | ttbar        | WW->2l2#nu   | WZ->3l#nu     | ZZ->2l2#nu  | Z+jets            | BG                | Signal      |
|--------------|--------------|--------------|---------------|-------------|-------------------|-------------------|-------------|
| 2 ss leptons | 21.80 ± 1.03 | 47.09 ± 2.38 | 528.69 ± 3.33 | 1.76 ± 0.09 | 15594.86 ± 198.26 | 16194.20 ± 198.31 | 4.40 ± 0.08 |
| 1 b-jet      | 16.36 ± 0.89 | 2.04 ± 0.49  | 34.32 ± 0.85  | 0.05 ± 0.02 | 526.80 ± 36.44    | 579.58 ± 36.46    | 3.15 ± 0.07 |
| MET > 30     | 13.89 ± 0.82 | 1.44 ± 0.42  | 26.33 ± 0.74  | 0.04 ± 0.01 | 85.70 ± 14.70     | 127.40 ± 14.74    | 2.70 ± 0.06 |

- ss\_barrel

|              | ttbar        | WW->2l2#nu   | WZ->3l#nu     | ZZ->2l2#nu  | Z+jets            | BG                | Signal       |
|--------------|--------------|--------------|---------------|-------------|-------------------|-------------------|--------------|
| 2 ss leptons | 26.22 ± 1.13 | 23.36 ± 1.67 | 627.51 ± 3.63 | 1.40 ± 0.08 | 10334.40 ± 161.40 | 11012.89 ± 161.45 | 10.64 ± 0.13 |
| 1 b-jet      | 20.15 ± 0.99 | 1.80 ± 0.46  | 57.22 ± 1.10  | 0.06 ± 0.02 | 362.96 ± 30.25    | 442.19 ± 30.29    | 7.71 ± 0.11  |
| MET > 30     | 16.41 ± 0.89 | 1.68 ± 0.45  | 43.78 ± 0.96  | 0.05 ± 0.02 | 42.85 ± 10.39     | 104.77 ± 10.48    | 6.69 ± 0.10  |

### 3 leptons

- 3l\_inclusive

|           | ttbar       | WW->2l2#nu  | WZ->3l#nu      | ZZ->2l2#nu  | Z+jets          | BG              | Signal       |
|-----------|-------------|-------------|----------------|-------------|-----------------|-----------------|--------------|
| 3 leptons | 6.80 ± 0.57 | 3.24 ± 0.62 | 1971.81 ± 6.44 | 0.22 ± 0.03 | 1928.25 ± 69.72 | 3910.31 ± 70.02 | 10.45 ± 0.13 |
| 1 b-jet   | 4.56 ± 0.47 | 0.12 ± 0.12 | 117.17 ± 1.57  | 0.02 ± 0.01 | 131.07 ± 18.18  | 252.95 ± 18.25  | 7.47 ± 0.11  |
| MET > 30  | 4.08 ± 0.45 | 0.12 ± 0.12 | 88.72 ± 1.37   | 0.01 ± 0.01 | 20.16 ± 7.13    | 113.10 ± 7.27   | 6.44 ± 0.10  |

- 3l\_endcap

|           | ttbar       | WW->2l2#nu  | WZ->3l#nu    | ZZ->2l2#nu  | Z+jets         | BG             | Signal      |
|-----------|-------------|-------------|--------------|-------------|----------------|----------------|-------------|
| 3 leptons | 0.10 ± 0.07 | 0.24 ± 0.17 | 42.06 ± 0.94 | 0.02 ± 0.01 | 191.56 ± 21.97 | 233.98 ± 21.99 | 0.12 ± 0.01 |
| 1 b-jet   | 0.05 ± 0.05 | 0.00 ± 0.00 | 1.83 ± 0.20  | 0.00 ± 0.00 | 7.56 ± 4.37    | 9.44 ± 4.37    | 0.08 ± 0.01 |
| MET > 30  | 0.05 ± 0.05 | 0.00 ± 0.00 | 1.32 ± 0.17  | 0.00 ± 0.00 | 0.00 ± 0.00    | 1.37 ± 0.17    | 0.07 ± 0.01 |

- 3l\_2end1bar

|           | ttbar       | WW->2l2#nu  | WZ->3l#nu     | ZZ->2l2#nu  | Z+jets         | BG             | Signal      |
|-----------|-------------|-------------|---------------|-------------|----------------|----------------|-------------|
| 3 leptons | 0.63 ± 0.18 | 0.96 ± 0.34 | 289.82 ± 2.47 | 0.05 ± 0.02 | 312.55 ± 28.07 | 604.01 ± 28.18 | 0.90 ± 0.04 |
| 1 b-jet   | 0.39 ± 0.14 | 0.00 ± 0.00 | 14.51 ± 0.55  | 0.00 ± 0.00 | 17.64 ± 6.67   | 32.55 ± 6.69   | 0.58 ± 0.03 |
| MET > 30  | 0.29 ± 0.12 | 0.00 ± 0.00 | 10.75 ± 0.48  | 0.00 ± 0.00 | 2.52 ± 2.52    | 13.56 ± 2.57   | 0.52 ± 0.03 |

- 3l\_1end2bar

|           | ttbar  | WW->2l2#nu  | WZ->3l#nu     | ZZ->2l2#nu  | Z+jets   | BG        | Signal      |
|-----------|--------|-------------|---------------|-------------|----------|-----------|-------------|
| 3 leptons | 2.62 ± | 0.96 ± 0.34 | 775.72 ± 4.04 | 0.04 ± 0.01 | 622.58 ± | 1401.93 ± | 2.94 ± 0.07 |

|          | ttbar       | WW->2l2#nu  | WZ->3l#nu    | ZZ->2l2#nu  | Z+jets       | BG           | Signal      |
|----------|-------------|-------------|--------------|-------------|--------------|--------------|-------------|
|          | 0.36        |             |              |             | 39.61        | 39.82        |             |
| 1 b-jet  | 1.51 ± 0.27 | 0.12 ± 0.12 | 41.20 ± 0.93 | 0.00 ± 0.00 | 32.77 ± 9.09 | 75.59 ± 9.14 | 2.14 ± 0.06 |
| MET > 30 | 1.36 ± 0.26 | 0.12 ± 0.12 | 30.93 ± 0.81 | 0.00 ± 0.00 | 5.04 ± 3.56  | 37.45 ± 3.67 | 1.82 ± 0.05 |

- 3l\_barrel

|           | ttbar       | WW->2l2#nu  | WZ->3l#nu     | ZZ->2l2#nu  | Z+jets         | BG              | Signal      |
|-----------|-------------|-------------|---------------|-------------|----------------|-----------------|-------------|
| 3 leptons | 3.45 ± 0.41 | 1.08 ± 0.36 | 864.21 ± 4.26 | 0.11 ± 0.02 | 801.55 ± 44.95 | 1670.39 ± 45.15 | 6.49 ± 0.10 |
| 1 b-jet   | 2.62 ± 0.36 | 0.00 ± 0.00 | 59.64 ± 1.12  | 0.01 ± 0.01 | 73.10 ± 13.57  | 135.37 ± 13.62  | 4.67 ± 0.08 |
| MET > 30  | 2.38 ± 0.34 | 0.00 ± 0.00 | 45.72 ± 0.98  | 0.01 ± 0.01 | 12.60 ± 5.64   | 60.71 ± 5.73    | 4.02 ± 0.08 |

## September 3

Same sign and 3 lepton selection split into categories.

### Same sign

- Inclusive

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets    | BG        | Signal |
|-------------------|---------|------------|-----------|------------|-----------|-----------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 781184.93 | 788389.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 766246.85 | 773395.24 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 765673.00 | 772820.94 | 4.62   |
| 2 ss leptons      | 1.76    | 3.10       | 63.47     | 0.14       | 497.56    | 566.03    | 0.67   |
| 1 b-jet           | 1.34    | 0.16       | 4.60      | 0.01       | 15.29     | 21.39     | 0.48   |
| extra lepton veto | 1.34    | 0.16       | 4.60      | 0.01       | 15.29     | 21.38     | 0.48   |
| MET > 30          | 1.12    | 0.13       | 3.45      | 0.00       | 1.26      | 5.96      | 0.42   |

- All endcap

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets    | BG        | Signal |
|-------------------|---------|------------|-----------|------------|-----------|-----------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 781184.93 | 788389.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 766246.85 | 773395.24 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 765673.00 | 772820.94 | 4.62   |
| 2 ss leptons      | 0.13    | 0.73       | 3.96      | 0.03       | 128.80    | 133.65    | 0.02   |
| 1 b-jet           | 0.10    | 0.03       | 0.22      | 0.00       | 3.11      | 3.46      | 0.01   |
| extra lepton veto | 0.10    | 0.03       | 0.22      | 0.00       | 3.11      | 3.46      | 0.01   |
| MET > 30          | 0.09    | 0.03       | 0.17      | 0.00       | 0.25      | 0.54      | 0.01   |

- Mixed

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets    | BG        | Signal |
|-------------------|---------|------------|-----------|------------|-----------|-----------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 781184.93 | 788389.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 766246.85 | 773395.24 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 765673.00 | 772820.94 | 4.62   |

|                   | ttbar | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets | BG     | Signal |
|-------------------|-------|------------|-----------|------------|--------|--------|--------|
| 2 ss leptons      | 0.73  | 1.57       | 20.88     | 0.06       | 218.20 | 241.44 | 0.16   |
| 1 b-jet           | 0.55  | 0.07       | 1.33      | 0.00       | 6.81   | 8.75   | 0.11   |
| extra lepton veto | 0.55  | 0.07       | 1.33      | 0.00       | 6.81   | 8.75   | 0.11   |
| MET > 30          | 0.46  | 0.05       | 1.01      | 0.00       | 0.67   | 2.19   | 0.10   |

- All barrel

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets    | BG        | Signal |
|-------------------|---------|------------|-----------|------------|-----------|-----------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 781184.93 | 788389.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 766246.85 | 773395.24 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 765673.00 | 772820.94 | 4.62   |
| 2 ss leptons      | 0.89    | 0.78       | 29.60     | 0.05       | 149.05    | 180.37    | 0.40   |
| 1 b-jet           | 0.68    | 0.06       | 2.38      | 0.00       | 5.38      | 8.50      | 0.29   |
| extra lepton veto | 0.68    | 0.06       | 2.38      | 0.00       | 5.38      | 8.50      | 0.29   |
| MET > 30          | 0.55    | 0.06       | 1.79      | 0.00       | 0.34      | 2.74      | 0.25   |

### 3 lepton

- Inclusive

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets     | BG         | Signal |
|-------------------|---------|------------|-----------|------------|------------|------------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 1600633.93 | 1607838.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 1567624.60 | 1574772.99 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 1566455.81 | 1573603.75 | 4.62   |
| 3 leptons         | 0.23    | 0.11       | 65.74     | 0.01       | 53.77      | 119.86     | 0.35   |
| 1 b-jet           | 0.15    | 0.00       | 3.91      | 0.00       | 3.53       | 7.59       | 0.25   |
| extra lepton veto | 0.15    | 0.00       | 3.91      | 0.00       | 3.53       | 7.59       | 0.25   |
| MET > 30          | 0.14    | 0.00       | 2.96      | 0.00       | 0.50       | 3.60       | 0.21   |

- All endcap

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets     | BG         | Signal |
|-------------------|---------|------------|-----------|------------|------------|------------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 1600633.93 | 1607838.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 1567624.60 | 1574772.99 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 1566455.81 | 1573603.75 | 4.62   |
| 3 leptons         | 0.00    | 0.01       | 1.40      | 0.00       | 5.04       | 6.46       | 0.00   |
| 1 b-jet           | 0.00    | 0.00       | 0.06      | 0.00       | 0.25       | 0.31       | 0.00   |
| extra lepton veto | 0.00    | 0.00       | 0.06      | 0.00       | 0.25       | 0.31       | 0.00   |
| MET > 30          | 0.00    | 0.00       | 0.04      | 0.00       | 0.00       | 0.05       | 0.00   |

- 2 endcap, 1 barrel

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets     | BG         | Signal |
|-------------------|---------|------------|-----------|------------|------------|------------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 1600633.93 | 1607838.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 1567624.60 | 1574772.99 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 1566455.81 | 1573603.75 | 4.62   |
| 3 leptons         | 0.02    | 0.03       | 9.66      | 0.00       | 9.24       | 18.96      | 0.03   |
| 1 b-jet           | 0.01    | 0.00       | 0.48      | 0.00       | 0.42       | 0.92       | 0.02   |
| extra lepton veto | 0.01    | 0.00       | 0.48      | 0.00       | 0.42       | 0.92       | 0.02   |
| MET > 30          | 0.01    | 0.00       | 0.36      | 0.00       | 0.08       | 0.45       | 0.02   |

- 2 barrel, 1 endcap

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets     | BG         | Signal |
|-------------------|---------|------------|-----------|------------|------------|------------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 1600633.93 | 1607838.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 1567624.60 | 1574772.99 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 1566455.81 | 1573603.75 | 4.62   |
| 3 leptons         | 0.09    | 0.03       | 25.86     | 0.00       | 17.22      | 43.21      | 0.10   |
| 1 b-jet           | 0.05    | 0.00       | 1.37      | 0.00       | 1.01       | 2.44       | 0.07   |
| extra lepton veto | 0.05    | 0.00       | 1.37      | 0.00       | 1.01       | 2.44       | 0.07   |
| MET > 30          | 0.05    | 0.00       | 1.03      | 0.00       | 0.17       | 1.25       | 0.06   |

- All barrel

|                   | ttbar   | WW->2l2#nu | WZ->3l#nu | ZZ->2l2#nu | Z+jets     | BG         | Signal |
|-------------------|---------|------------|-----------|------------|------------|------------|--------|
| single lepton     | 2715.04 | 3690.45    | 671.47    | 127.30     | 1600633.93 | 1607838.19 | 4.62   |
| Good PV           | 2702.16 | 3666.12    | 654.57    | 125.54     | 1567624.60 | 1574772.99 | 4.62   |
| Cosmics rejection | 2702.11 | 3665.83    | 654.47    | 125.52     | 1566455.81 | 1573603.75 | 4.62   |
| 3 leptons         | 0.11    | 0.04       | 28.81     | 0.00       | 22.27      | 51.23      | 0.22   |
| 1 b-jet           | 0.09    | 0.00       | 1.99      | 0.00       | 1.85       | 3.92       | 0.16   |
| extra lepton veto | 0.09    | 0.00       | 1.99      | 0.00       | 1.85       | 3.92       | 0.16   |
| MET > 30          | 0.08    | 0.00       | 1.52      | 0.00       | 0.25       | 1.86       | 0.13   |

## September 1

Today's numbers...

### 3 lepton selection

|                       | ttbar   | WW->2l2 | WZ->3l | ZZ->2l2 | Z+jets     | BG         | Signal |
|-----------------------|---------|---------|--------|---------|------------|------------|--------|
| single lepton         | 2715.04 | 3690.45 | 671.47 | 127.30  | 1159485.21 | 1166689.48 | 4.62   |
| HLT selection/weights | 2715.04 | 3690.45 | 671.47 | 127.30  | 1159485.21 | 1166689.48 | 4.62   |
| Good PV               | 2702.16 | 3666.12 | 654.57 | 125.54  | 1140225.00 | 1147373.40 | 4.62   |
| Data quality          | 2702.16 | 3666.12 | 654.57 | 125.54  | 1140225.00 | 1147373.40 | 4.62   |
| Cosmics rejection     | 2702.11 | 3665.83 | 654.47 | 125.52  | 1139367.25 | 1146515.19 | 4.62   |
| 3 leptons             | 0.23    | 0.11    | 65.74  | 0.01    | 39.41      | 105.49     | 0.35   |
| 1 b-jet               | 0.15    | 0.00    | 3.91   | 0.00    | 2.44       | 6.50       | 0.25   |
| MET > 30              | 0.14    | 0.00    | 2.96   | 0.00    | 0.34       | 3.43       | 0.21   |

### Same-sign selection

|                       | ttbar   | WW->2l2 | WZ->3l | ZZ->2l2 | Z+jets    | BG        | Signal |
|-----------------------|---------|---------|--------|---------|-----------|-----------|--------|
| single lepton         | 1408.48 | 3690.45 | 671.47 | 127.30  | 312347.00 | 318244.70 | 4.62   |
| HLT selection/weights | 1408.48 | 3690.45 | 671.47 | 127.30  | 312347.00 | 318244.70 | 4.62   |
| Good PV               | 1396.92 | 3666.12 | 654.57 | 125.54  | 310681.99 | 316525.13 | 4.62   |
| Data quality          | 1396.92 | 3666.12 | 654.57 | 125.54  | 310681.99 | 316525.13 | 4.62   |
| Cosmics rejection     | 1396.90 | 3665.83 | 654.47 | 125.52  | 310450.34 | 316293.07 | 4.62   |
| 2 ss leptons          | 0.95    | 3.10    | 63.47  | 0.14    | 202.82    | 270.47    | 0.67   |
| 1 b-jet               | 0.73    | 0.16    | 4.60   | 0.01    | 6.13      | 11.62     | 0.48   |
| MET > 30              | 0.60    | 0.13    | 3.45   | 0.00    | 0.25      | 4.44      | 0.42   |

## August 24

### 3 lepton selection

Lowered trailing lepton pt cut to 7 GeV (it maybe forced to be 10 GeV in the ntuplizer in some strange way).

- Scaled to x-section

|                   | ttbar   | WW->2l2nu | WZ->3lnu | ZZ->2l2nu | Z+jets     | BG         | Signal (x5) |
|-------------------|---------|-----------|----------|-----------|------------|------------|-------------|
| single lepton     | 2715.04 | 3690.45   | 671.47   | 127.30    | 1854493.61 | 1861697.88 | 23.089664   |
| Good PV           | 2702.16 | 3666.12   | 654.57   | 125.54    | 1820373.63 | 1827522.03 | 23.089408   |
| Cosmics rejection | 2702.11 | 3665.83   | 654.47   | 125.52    | 1819020.58 | 1826168.53 | 23.08736    |
| 3 leptons         | 0.23    | 0.11      | 65.74    | 0.01      | 64.36      | 130.44     | 1.74464     |
| 1 b-jet           | 0.15    | 0.00      | 3.91     | 0.00      | 4.37       | 8.43       | 1.246464    |
| extra lepton veto | 0.15    | 0.00      | 3.91     | 0.00      | 4.37       | 8.43       | 1.245696    |
| extra b-jet veto  | 0.13    | 0.00      | 3.69     | 0.00      | 4.03       | 7.86       | 0.962304    |
| MET > 30          | 0.12    | 0.00      | 2.79     | 0.00      | 0.67       | 3.58       | 0.828416    |

- Raw

|                   | ttbar      | WW->2l2nu | WZ->3lnu  | ZZ->2l2nu | Z+jets      | BG          | Signal  |
|-------------------|------------|-----------|-----------|-----------|-------------|-------------|---------|
| single lepton     | 1677407.00 | 924014.00 | 957926.00 | 786091.00 | 22072183.00 | 26417621.00 | 90194.0 |
| Good PV           | 1669451.00 | 917922.00 | 933806.00 | 775230.00 | 21666087.00 | 25962496.00 | 90193.0 |
| Cosmics rejection | 1669420.00 | 917851.00 | 933673.00 | 775099.00 | 21649983.00 | 25946026.00 | 90185.0 |
| 3 leptons         | 140.00     | 27.00     | 93787.00  | 46.00     | 766.00      | 94766.00    | 6815.0  |
| 1 b-jet           | 94.00      | 1.00      | 5574.00   | 4.00      | 52.00       | 5725.00     | 4869.0  |
| extra lepton veto | 94.00      | 1.00      | 5572.00   | 4.00      | 52.00       | 5723.00     | 4866.0  |
| extra b-jet veto  | 83.00      | 1.00      | 5260.00   | 4.00      | 48.00       | 5396.00     | 3759.0  |
| MET > 30          | 74.00      | 1.00      | 3974.00   | 3.00      | 8.00        | 4060.00     | 3236.0  |

### same-sign dileptons

- Second lepton has 10 GeV pt cut

|                       | ttbar   | WW->2l2 | WZ->3l | ZZ->2l2 | Z+jets     | BG         | Signal    |
|-----------------------|---------|---------|--------|---------|------------|------------|-----------|
| single lepton         | 2715.04 | 3690.45 | 671.47 | 127.30  | 1854493.61 | 1861697.88 | 4.6179328 |
| HLT selection/weights | 2715.04 | 3690.45 | 671.47 | 127.30  | 1854493.61 | 1861697.88 | 4.6179328 |
| Good PV               | 2702.16 | 3666.12 | 654.57 | 125.54  | 1820373.63 | 1827522.03 | 4.6178816 |
| Data quality          | 2702.16 | 3666.12 | 654.57 | 125.54  | 1820373.63 | 1827522.03 | 4.6178816 |
| Cosmics rejection     | 2702.11 | 3665.83 | 654.47 | 125.52  | 1819020.58 | 1826168.53 | 4.617472  |
| 2 ss leptons          | 1.76    | 3.10    | 63.47  | 0.14    | 1183.92    | 1252.39    | 0.667136  |
| 1 b-jet               | 1.34    | 0.16    | 4.60   | 0.01    | 38.06      | 44.15      | 0.4796416 |
| extra lepton veto     | 1.34    | 0.16    | 4.60   | 0.01    | 38.06      | 44.15      | 0.4796416 |
| extra b-jet veto      | 0.91    | 0.16    | 4.32   | 0.01    | 36.38      | 41.78      | 0.353792  |
| MET > 30              | 0.78    | 0.13    | 3.23   | 0.00    | 4.62       | 8.76       | 0.3058176 |

- RAW

|                       | ttbar      | WW->2l2   | WZ->3l    | ZZ->2l2   | Z+jets      | BG          | Signal  |
|-----------------------|------------|-----------|-----------|-----------|-------------|-------------|---------|
| single lepton         | 1677407.00 | 924014.00 | 957926.00 | 786091.00 | 22072183.00 | 26417621.00 | 90194.0 |
| HLT selection/weights | 1677407.00 | 924014.00 | 957926.00 | 786091.00 | 22072183.00 | 26417621.00 | 90194.0 |

|                   | ttbar      | WW->2l2   | WZ->3l    | ZZ->2l2   | Z+jets      | BG          | Signal  |
|-------------------|------------|-----------|-----------|-----------|-------------|-------------|---------|
| Good PV           | 1669451.00 | 917922.00 | 933806.00 | 775230.00 | 21666087.00 | 25962496.00 | 90193.0 |
| Data quality      | 1669451.00 | 917922.00 | 933806.00 | 775230.00 | 21666087.00 | 25962496.00 | 90193.0 |
| Cosmics rejection | 1669420.00 | 917851.00 | 933673.00 | 775099.00 | 21649983.00 | 25946026.00 | 90185.0 |
| 2 ss leptons      | 1088.00    | 775.00    | 90553.00  | 844.00    | 14091.00    | 107351.00   | 13030.0 |
| 1 b-jet           | 825.00     | 39.00     | 6558.00   | 36.00     | 453.00      | 7911.00     | 9368.0  |
| extra lepton veto | 825.00     | 39.00     | 6557.00   | 36.00     | 453.00      | 7910.00     | 9368.0  |
| extra b-jet veto  | 565.00     | 39.00     | 6168.00   | 33.00     | 433.00      | 7238.00     | 6910.0  |
| MET > 30          | 481.00     | 33.00     | 4602.00   | 26.00     | 55.00       | 5197.00     | 5973.0  |

## August 22

Some yields for the freshly minted top-Higgs-FCNC-extravaganza!

|                       | ttbar   | WW->2l2 | WZ->2l2 | ZZ->2l2 | Z+jets     | BG         | Signal    |
|-----------------------|---------|---------|---------|---------|------------|------------|-----------|
| single lepton         | 2715.04 | 3727.74 | 671.47  | 127.30  | 1854493.61 | 1861735.18 | 4.6179328 |
| HLT selection/weights | 2715.04 | 3727.74 | 671.47  | 127.30  | 1854493.61 | 1861735.18 | 4.6179328 |
| Good PV               | 2702.16 | 3703.41 | 654.57  | 125.54  | 1820373.63 | 1827559.32 | 4.6178816 |
| Data quality          | 2702.16 | 3703.41 | 654.57  | 125.54  | 1820373.63 | 1827559.32 | 4.6178816 |
| Cosmics rejection     | 2702.13 | 3703.18 | 654.50  | 125.53  | 1819347.92 | 1826533.25 | 4.6177792 |
| 3 leptons             | 0.05    | 0.04    | 48.78   | 0.00    | 18.65      | 67.53      | 0.1899008 |
| 1 b-jet               | 0.03    | 0.00    | 2.97    | 0.00    | 1.43       | 4.43       | 0.1358848 |
| extra lepton veto     | 0.03    | 0.00    | 2.97    | 0.00    | 1.43       | 4.43       | 0.1358336 |
| extra b-jet veto      | 0.03    | 0.00    | 2.80    | 0.00    | 1.26       | 4.09       | 0.1050624 |
| MET > 30              | 0.03    | 0.00    | 2.09    | 0.00    | 0.25       | 2.37       | 0.0890368 |

-- NateOdell - 23-Aug-2012

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